

Patent claims

1. A method for a ceramic substrate which is included
5 in or forms a unit, for example an implant,
spacer, crown, etc., in a dental installation,
characterized in that the substrate, at least at a
portion bearing a surface, is provided with a
first porosity, in that, in order to form a
10 ceramic layer with a second porosity having
preferably larger and/or more pores than in the
first porosity, a dispersion with a viscous
liquid, preferably a low-viscosity liquid, is
applied to the surface, said liquid having the
15 ability to be sucked by capillary force into the
first pore formation and, in a first stage, to
retain on the surface material and/or liquid
particles which do not penetrate into this first
pore formation and which contribute to the
20 continued construction of the layer, and in that,
in a second stage, the substrate is subjected to
sintering in which the particles finally forming
the layer are held together with intermediate
spaces which consist of or are included in the
25 second porosity, the spaces being formed either by
the fact that material and/or liquid particles
separate from the particles finally forming the
layer are driven off during the sintering and/or
by the fact that the particles forming the layer
30 are chosen with a particle size which means that
the last-mentioned particles are held together
after the sintering despite the intermediate
spaces.
- 35 2. The method as claimed in patent claim 1,
characterized in that the particles are allocated
a size and/or shape determining the pore
formation, in that the particles thus forming as
pore formers are chosen to be insoluble in the

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liquid included in the dispersion, in that the particles for forming the dispersion are dispersible in the liquid with or without dispersant, in that the particles can be driven off, preferably easily driven off, by means of a removal function, for example burning in a furnace and/or etching and/or leaching and/or smelting and/or sublimation and/or dissolving, and in that the particles are arranged or chosen to show a low residual degree of impurity after the removal function has been performed.

3. The method as claimed in patent claim 1 or 2, characterized in that the substrate (1) is presintered in order to form the first porosity, and in that ceramic particles in the form of zirconia, alumina and/or hydroxyapatite, constituting the particles forming the final layer, are mixed into the dispersion, and the ceramic particles are assigned sizes in the range of 0.1 - 1.0 μm , preferably 0.2 - 0.6 μm .

4. The method as claimed in patent claims 1 and 2, characterized in that the particles for pore formation can consist of graphite particles or starch particles and are assigned sizes in the range of 0.1 - 100 μm , preferably 0.3 - 50 μm or 0.5 - 10 μm .

5. The method as claimed in patent claims 1, 3 and 7, characterized in that the substrate is presintered to form the first porosity, and ceramic particles and the pore formers are formed with emulsion which preferably consists of an acrylic polymer emulsion with liquid particles which are driven off in said second stage.

6. The method as claimed in patent claim 1, characterized in that the substrate is pre-

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sintered to form the first porosity, and in that particles of zirconia, alumina or hydroxyapatite are mixed into the dispersion and have such a size that the porosity remains after sintering.

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7. The method as claimed in patent claim 1, characterized in that the thickness and/or extent of the layer on the surface is varied, for example by one or more immersions in the dispersion and/or
- 10 by variation of the dry substance content.
8. The method as claimed in patent claim 1, characterized in that different pore formers are used to achieve the variation or variations in the
- 15 pore structure of the layer, such as pore number, pore size and pore distribution.
9. The method as claimed in any of patent claims 1-8, characterized in that the substrate is provided
- 20 with a thread or thread part located on the surface or forming the surface, and in that any variation in the thickness, extent, etc., of the layer changes along the extent of the thread or thread part between the internal and external
- 25 diameters.
10. The method as claimed in any of patent claims 1-9, characterized in that the dispersion is applied to the surface with the aid of dripping, spraying
- 30 and/or immersion methods.
11. The method as claimed in any of patent claims 1-10, characterized in that water and/or alcohol is added as the low-viscosity liquid.
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12. A method for a ceramic substrate which is included in or forms a unit, for example an implant, spacer, crown, etc., in a dental installation, characterized in that the substrate, at least at a

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portion bearing a surface, is provided with a non-porous surface, in that, in order to form a ceramic layer with a porosity, a dispersion of a viscous liquid is applied to the surface, said liquid having the ability to dry and, in a first stage, to retain on the surface material and/or liquid particles which do not penetrate into this porosity and which contribute to the continued construction of the layer, and in that, in a second stage, the substrate is subjected to sintering in which the particles finally forming the layer are held together with intermediate spaces which consist of or are included in the porosity, the spaces being formed either by the fact that material and liquid particles separate from the particles finally forming the layer are driven off during the sintering and/or by the fact that the particles forming the layer are chosen with a particle size which means that the last-mentioned particles are held together after the sintering despite the intermediate spaces.

13. An arrangement, for example implant, spacer/spacer sleeve, crown, etc., made completely or partially of ceramic substrate, characterized in that the substrate, at least at a portion bearing a surface, is arranged with the ability to form a first porosity (pore formation), in that the surface bears a ceramic layer applied by means, inter alia, of sintering and with a second porosity having preferably larger and/or more pores than in the first porosity, in that the first porosity is arranged, before sintering of the layer, to have the ability to receive, by capillary force, a preferably low-viscosity liquid and at the surface retain particles dispersed in the liquid which contribute to the formation of the layer, and in that the latter is based on driving off by means of sintering of particles

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forming intermediate spaces, or in that the particles which form the layer have a particle size permitting the formation of intermediate spaces despite the sintering.